

Obstacles and Perspectives

EES 3310/5310

Global Climate Change

Jonathan Gilligan

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Obstacles to Climate Policies

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Nordhaus's Version:

1. Prisoners of Nationalism
2. Prisoners of the Present
3. Prisoners of Partisanship
4. Prisoners of Self-Interest

Game Theory: Nationalism and Prisoner's Dilemma

Free Riding: Five Countries

Tons Abated	Marginal Cost (One Country)	Marginal Benefit (All Countries)	Cumulative Cost (One Country)	Cumulative Benefit (All Countries)
1	3	25	3	25
2	6	25	9	50
3	9	25	18	75
4	12	25	30	100
5	15	25	45	125
6	18	25	63	150
7	21	25	84	175
8	24	25	108	200
9	27	25	135	225
10	30	25	165	250

- Five Countries
 - Benefits for each ton of abatement by anyone:
 - Each country: \$5
 - World: \$25 (\$5 for each of 5 countries)
 - Optimum:
 - What is the optimum abatement?
 - Optimum abatement is 8 tons from each country
 - $5 \times 8 \text{ tons} = 40 \text{ tons total}$

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10	30	25	165	250

- If everyone abates 8 tons:
 - Each country pays \$108
 - Total abatement = $5 \times 8 \text{ tons} = 40 \text{ tons}$
 - Each country benefits $40 \times \$5 = \200
 - Net benefit for each country: \$92
 - Net benefit for World: $\$92 \times 5 = \460

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10	30	25	165	250

- If everyone abates 8 tons:
 - Total abatement: 40 tons
 - Each pays \$108, benefits \$200
 - Net benefits:
 - \$92 for each country,
 - \$460 for the world
- Four abate 8 tons, one abates 1 ton
 - Four pay \$108, one pays \$3
 - Total abatement = 33 tons
 - Each country benefits $33 \times \$5 = \165
 - Net benefits:
 - 4 countries get \$57 (\$35 worse off),
 - One gets \$162 (\$70 better off),
 - World: \$390 (\$70 worse off).

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8	24	25	108	200
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10	30	25	165	250

- If everyone abates 8 tons:
 - Net benefits:
 - \$92 for each country,
 - \$460 for world.
- 4 abate 8 tons, one abates 1 ton
 - Four countries are \$35 worse off,
 - 1 is \$70 better off.
 - World is \$70 worse off
- 5 countries each abate 1 ton
 - Each country pays \$3, benefits \$25
 - Net benefits:
 - Each country: \$22 (\$70 worse off)
 - World: \$110 (\$350 worse off)

Free Riding: Five Countries

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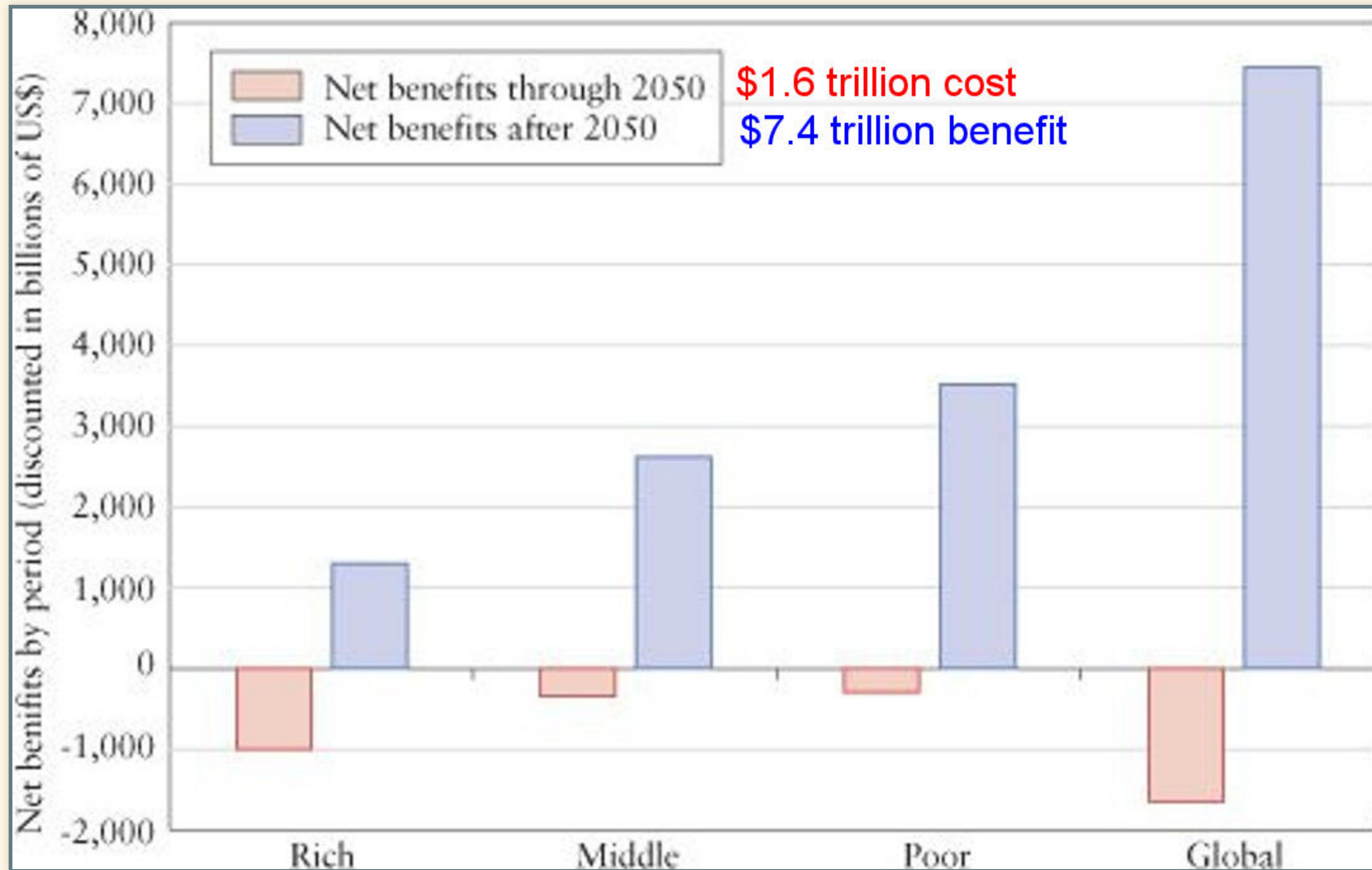
- 5 countries each abate 1 ton
 - Net benefits:
 - Each country: \$22
 - World: \$110
- 4 abate 1 ton, one abates 2 tons
 - 4 pay \$3, 1 pays \$9
 - Each country benefits \$30
 - Net Benefits:
 - 4 countries: \$27 (\$5 better off)
 - One country: \$21 (\$1 worse off)
 - World: \$129 (\$19 better off)
 - Abating the extra ton helped everyone except the country that did it.

Nash Equilibrium

- If everyone does the same thing:
 - Everyone is best off cutting 8 tons
- If everyone else cuts 8 tons:
 - I am best off cutting 1 ton
- No matter what everyone else does:
 - I am better off cutting 1 ton
- If everyone does what is best for themselves:
 - Everyone is worse off than if everyone cooperates
- “Prisoner’s dilemma”

Prisoners of the Present

Myopia and Temporal Tradeoffs

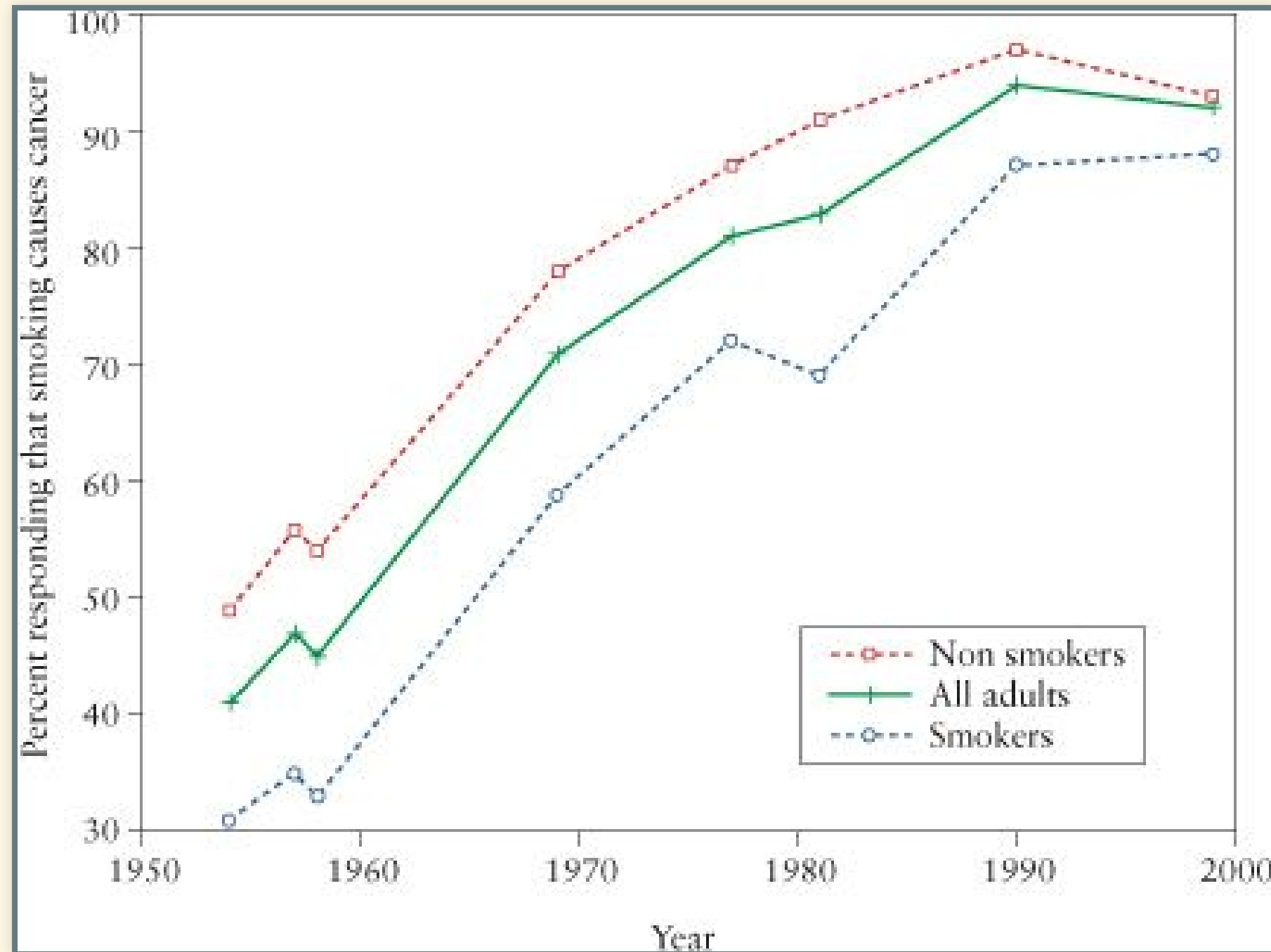


Prisoners of Partisanship and Self-Interest

Politics

- Partisanship:
 - 4,000 coal mining jobs in economy with 140 million jobs
- Merchants of Doubt:
 - Industry spending on misinformation
 - Compare to tobacco:
 - \$30 billion/year tobacco industry
 - \$1000 billion/year energy industry

Merchants of Doubt



- You can't fool all of the people all of the time
- Compare carbon taxes to tobacco taxes

Krugman on Nordhaus

Historical Perspective

- **Early Nordhaus:**
 - Debunker
 - Emphasized high discount rates
 - Estimated relatively small damages from warming
 - Conclusion: No rush to decarbonize, do it slowly and cheaply
- **Later Nordhaus:**
 - Every assessment increases estimates of damage:
 - More urgency: spend more, decarbonize faster
 - Discount rates don't matter as much as he used to think
 - Unmanageable Systems
 - Conclusion: Keep warming from going much above 2°C

Krugman's Criticisms

- Nordhaus emphasizes carbon pricing
 - Economically this is about balancing multiple factors
 - But one factor is dominant: coal-fired electricity
 - When one factor dominates, stronger case for command-and-control regulation
- Policy target:
 - Criticizes (debunks) 2°C target: “Not very scientific”
 - But concludes optimum target is around 2.3°C
- Big picture:
 - Will *The Climate Casino* change anyone's mind?

Discuss

- We have read four different perspectives on climate policy:
 - Nordhaus *Climate Casino* (pricing carbon, “buying insurance”)
 - Pielke *Climate Fix* (“oblique strategy”)
 - Victor *Global Warming Gridlock* (clubs of nations)
 - Gilligan & Vandenbergh *Beyond Politics* (private governance)
- Discuss what you think are the strengths and weaknesses of each approach
- What would you advocate for climate policy?